WM-FX42/FX45

SERVICE MANUAL

US Model
WM-FX42/FX45
Canadian Model
AEP Model
UK Model
E Model
WM-FX45

Photo: WM-FX42

Model Name Using Similar Mechanism	WM-F2061
Tape Transport Mechanism Type	MT-WM2051-43

SPECIFICATIONS

Radio section

Frequency range: FM: 87.5 – 108.0 MHz (100 kHz step)
AM: 530 – 1,710 kHz (10 kHz step)

Antennas: FM: Headphone cord antenna
AM: Built-in ferrite bar antenna

Tape player section

Frequency response: 40 – 15,000 Hz (NORM, CrO_2/METAL)

Power output: 5 mW + 5 mW 16Ω at DC operation
Headphones (stereo minijack): load impedance 8 – 300Ω

Power requirements: 3 V DC
Two size AA (R6) batteries
DC IN 3V jack accepts:
Optional Sony AC-E30L AC power adaptor for use on 120 V AC, 60 Hz
Optional Sony DCC-E130L car battery cord for use with 12 V car battery

Battery life (hours)

	Playback	Radio
Sony alkaline AM3 (N)	11	32
Sony SUM-3 (NS)	4	13

Dimensions: Approx. 117.3 × 85.7 × 37 mm (w/h/d)
($4^5/_8$ × $3^3/_8$ × $1^1/_2$ in.)
not incl. projecting parts and controls

Mass: Approx. 250 g (8.9 oz.)
incl. batteries and belt clip

Accessories supplied: Stereo headphones (1)
Belt clip (1)

Design and specifications subject to change without notice.

Optional accessories

AC power adaptor AC-E30L
Car battery cord DCC-E130L

Your dealer may not handle some of the above listed accessories. Please ask the dealer for detailed information.

MICROFILM

RADIO CASSETTE PLAYER

SONY®

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270 ℃ during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

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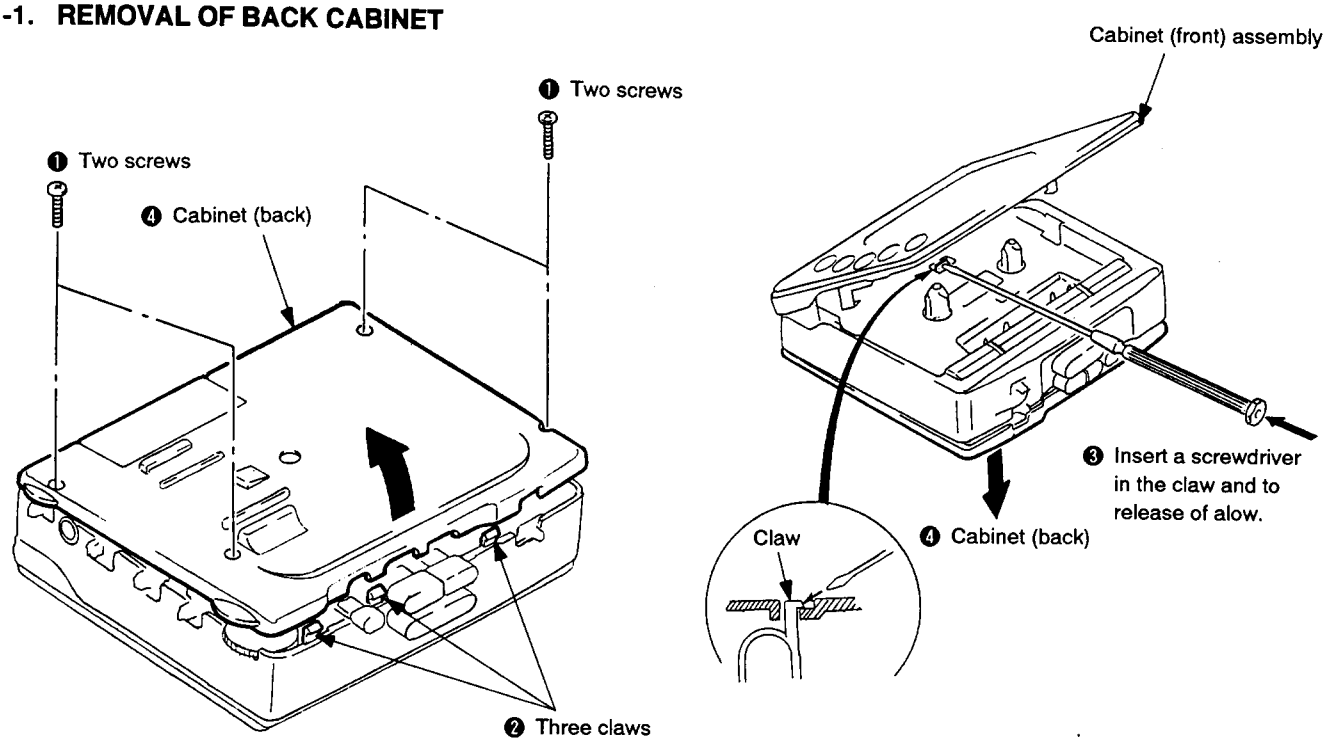
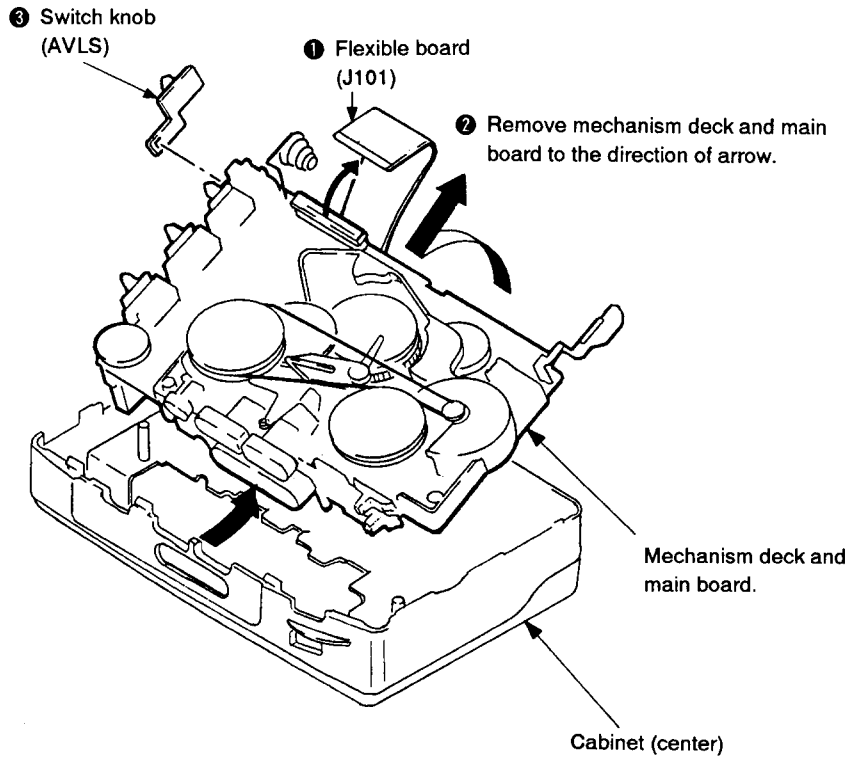
SECTION 1
DISASSEMBLY

Note:
Follow the removal procedure in the numerical order given.

1-1. REMOVAL OF BACK CABINET

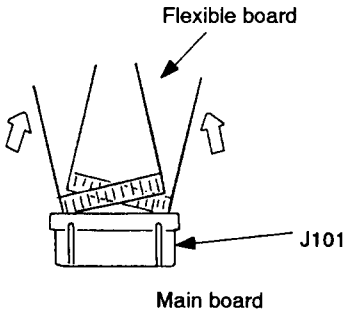


1-2. REMOVAL OF MECHANISM AND MAIN BOARD


❸ Switch knob (AVLS)
❶ Flexible board (J101)
❷ Remove mechanism deck and main board to the direction of arrow.
Mechanism deck and main board.
Cabinet (center)

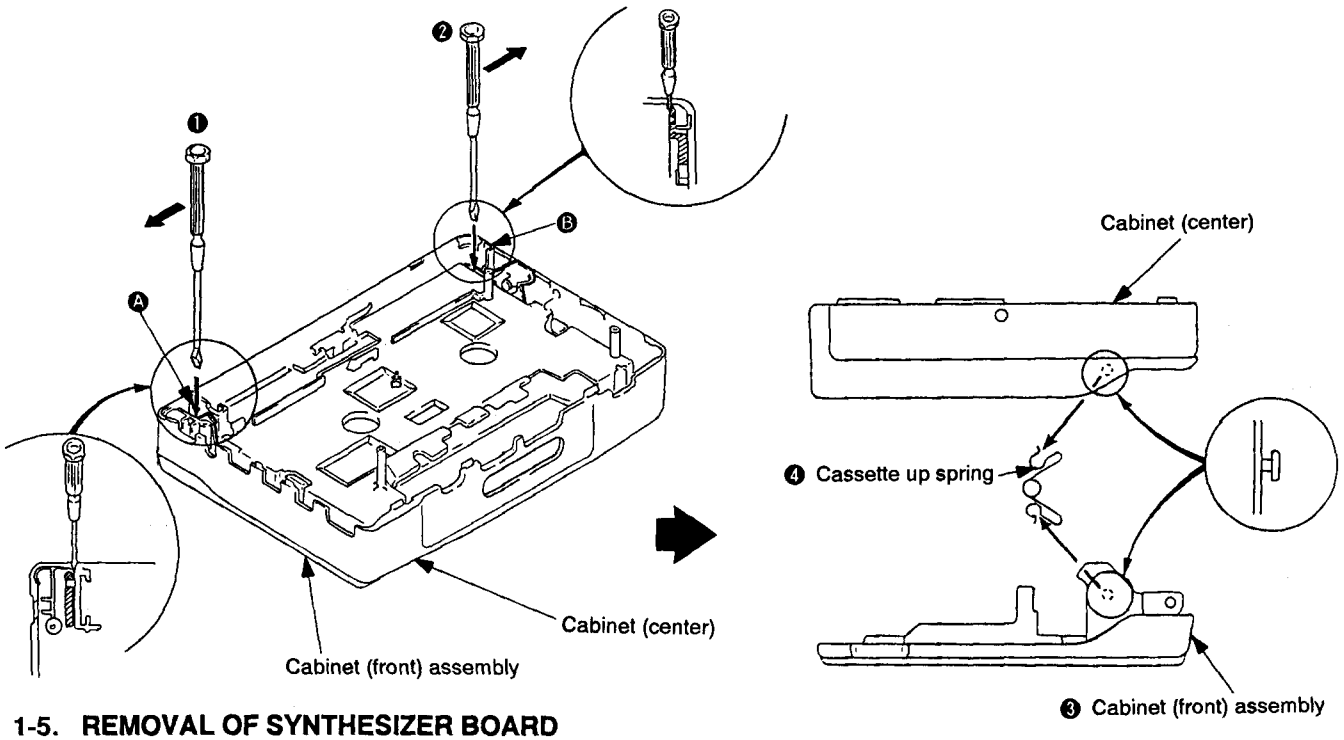
1-3. REMOVAL OF FLEXIBLE BOARD

Remove the flexible board from the edges alternately. Be sure not to pull the board all at once as this may damage the connector.

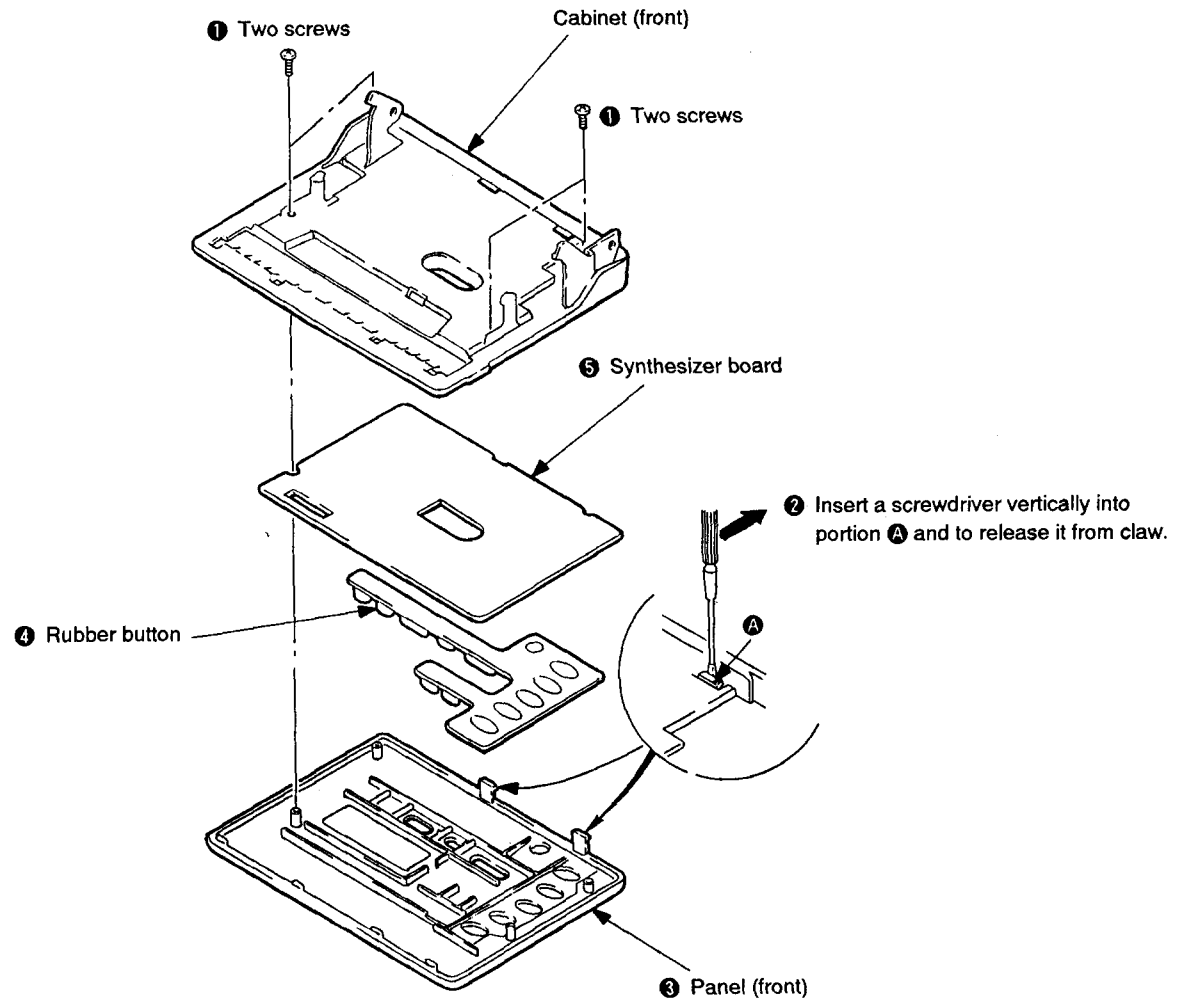


1-4. REMOVAL OF FRONT CABINET ASSEMBLY

Insert a screwdriver (1.4 mm flat-blade) vertically in to portion Ⓐ and Ⓑ to release the hinge plate.

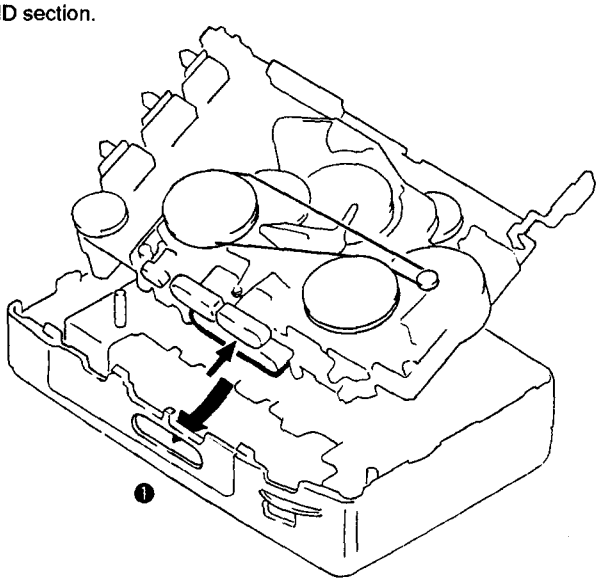


1-5. REMOVAL OF SYNTHESIZER BOARD

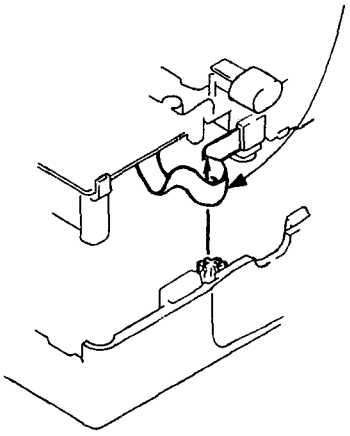

❶ Two screws
Cabinet (front)
❶ Two screws
❺ Synthesizer board
❷ Insert a screwdriver vertically into portion Ⓐ and to release it from claw.
Ⓐ
❹ Rubber button
❸ Panel (front)

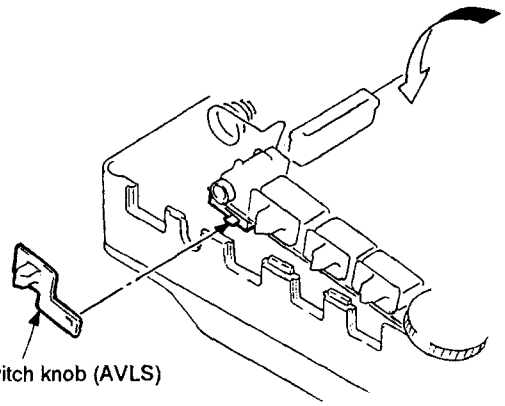
1-6. INSTALLATION OF MECHANISM AND MAIN BOARD

Note: When installing the main board, avoid damaging the leaf switch by setting DIR SW to "REV" and pressing the PLAY button before attaching it inside the MD section.



❷ Make sure to put the head flexible board to ditch before install the mechanism deck and main board.





SECTION 2
ADJUSTMENTS

2-1. MECHANICAL MEASUREMENTS

Precaution

1. Clean the followng parts with a denatured-alcohol-moistened swab:
   playback head pinch roller
   capstan rubber belts
2. Demagnetize the playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustment.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage (2.5V) unless otherwise noted.

The following measurements are necessary when tape running problems are occured or repaired the tape transport mehcanism.

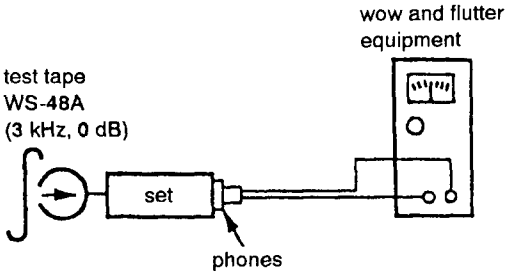
Torque Measurement

Mode	Torque meter	Meter reading
FWD	CQ-102C	20 to 42 g-cm (0.28 to 0.58 oz-inch)
FWD Back Tension		less than 2 g-cm (less than 0.03 oz-inch)
REV	CQ-102RC	20 to 42 g-cm (0.28 to 0.58 oz-inch)
REV Back Tension		less than 2 g-cm (less than 0.03 oz-inch)
FF, REW	CQ-201B	more than 60 g-cm (more than 0.83 oz-inch)

Wow and Flutter Measurement

Procedure:

Function : Tape
Mode : Forward



Playback the center part of the test tape (WS-48A) and measure the wow and flutter at the unweighted position of the wow and flutter equipment.

Specification: Less than 0.6% rms (JIS)

2-2. ELECTRICAL ADJUSTMENTS

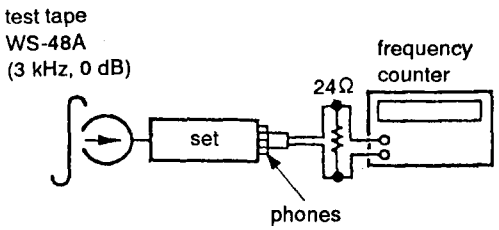
Precaution

- Supplied voltage: 2.5V
- Switch and control position
  Function: Tape
  TAPE: NORM
  AVLS: OFF
  VOLUME control: maximum

Tape section

Tape speed adjustment

Procedure:
Function : TAPE



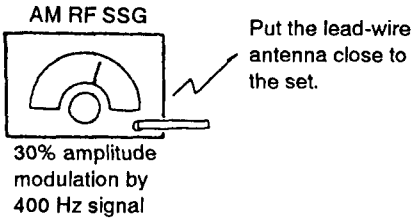
1. Playback the center part of test tape (WS-48A) in FWD mode first. Then, change to REV mode.
   Adjust RV605 so that the frequency counter reads 2970 Hz ± 10 Hz in REV mode.
2. Change to FWD mode again. Confirm that the frequency counter reads 2975 ± 35 Hz.

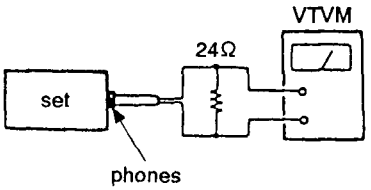
Mode	Reading on frequency counter
REV	2970 Hz ± 10 Hz (Adjust value)
FWD	2975 Hz ± 35 Hz (Confirm value)

3. Confirm that the tape speed difference between Top part of test tape in FWD mode and End part of test tape in REV mode is less than 1.5%.

Radio section

- MW IF/MW Tracking Adjustment





- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

AM IF Alignment

SG frequency	Adjustment part	Reading on VTVM
450 kHz	T101	maximum

AM Tracking Adjustment

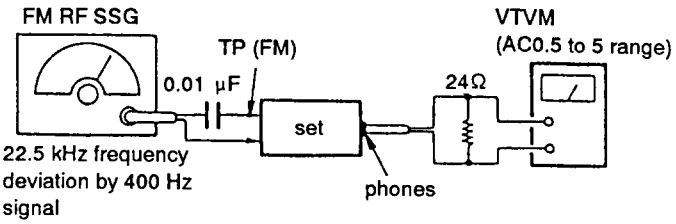
SG and set frequency	Adjustment part	Reading on VTVM
600 kHz	T102	maximum
1,400 kHz	C121	

Note: Set volume is maximum.

- DC-DC Converter Adjustment
  FUNCTION : Radio
  BAND : AM or FM
  Connect the frequency counter to TP (DDC), and adjust T201 so that it reads 2.7 MHz ± 0.5 MHz.

- AM OSC frequency Adjustment
  FUNCTION : Radio
  BAND : AM
  D101 : SHORT
  Connect the frequency counter to TP (AM), and adjust T103 so that it reads 715 kHz.
  After adjusting, set D101 to "open".

- **FM SECTION**



- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

FM Tracking Adjustment

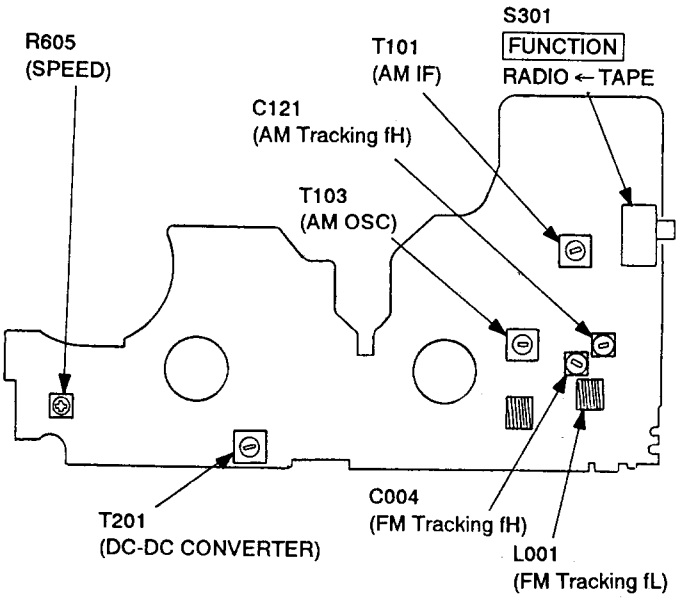
SG and set frequency	Adjustment part	Reading on VTVM
90.0 MHz	L001	maximum
106.0 MHz	C004	

Note: The tracking point is preset to the "10 RANDOM PRESET" of the front panel.
- The S701 (9 kHz/10 kHz) selection switch also functions as a RESET button.

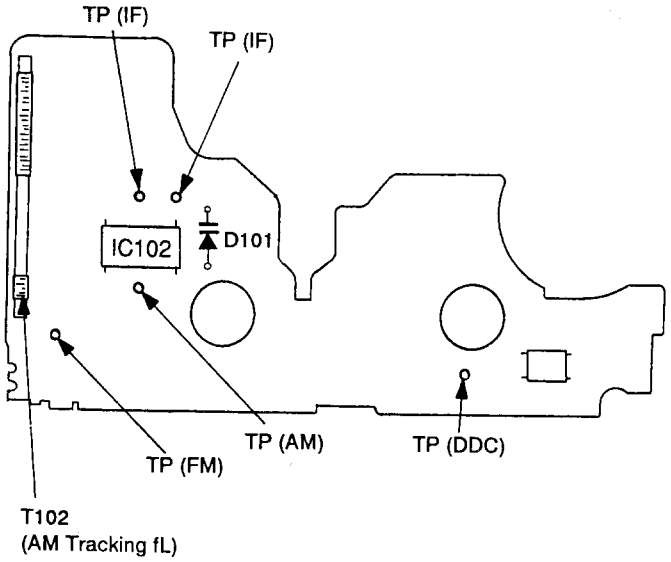
PRESET	FREQUENCY	PRESET	FREQUENCY
1	87.5 MHz	6 (+5 → 1)	530 kHz
2	90 MHz	7 (+5 → 2)	600 kHz
3	98 MHz	8 (+5 → 3)	1000 kHz
4	106 MHz	9 (+5 → 4)	1400 kHz
5	108 MHz	10 (+5 → 5)	1710 kHz

Adjustment Location

[MAIN BOARD] — COMPONENT SIDE —

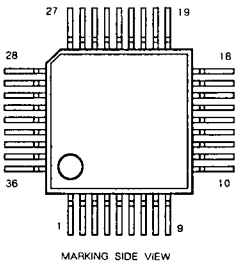


[MAIN BOARD] — CONDUCTOR SIDE —

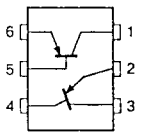


3-4. SEMICONDUCTORS

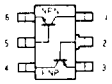
LA4582M



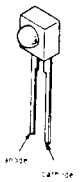
IMT3



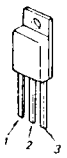
IMZ1



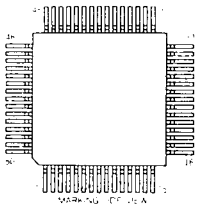
TLR214



1SV149-B

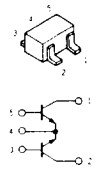


TC9308AF-051

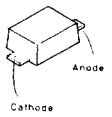


DA114
1SV232-TPHR3

FMW1



MA729

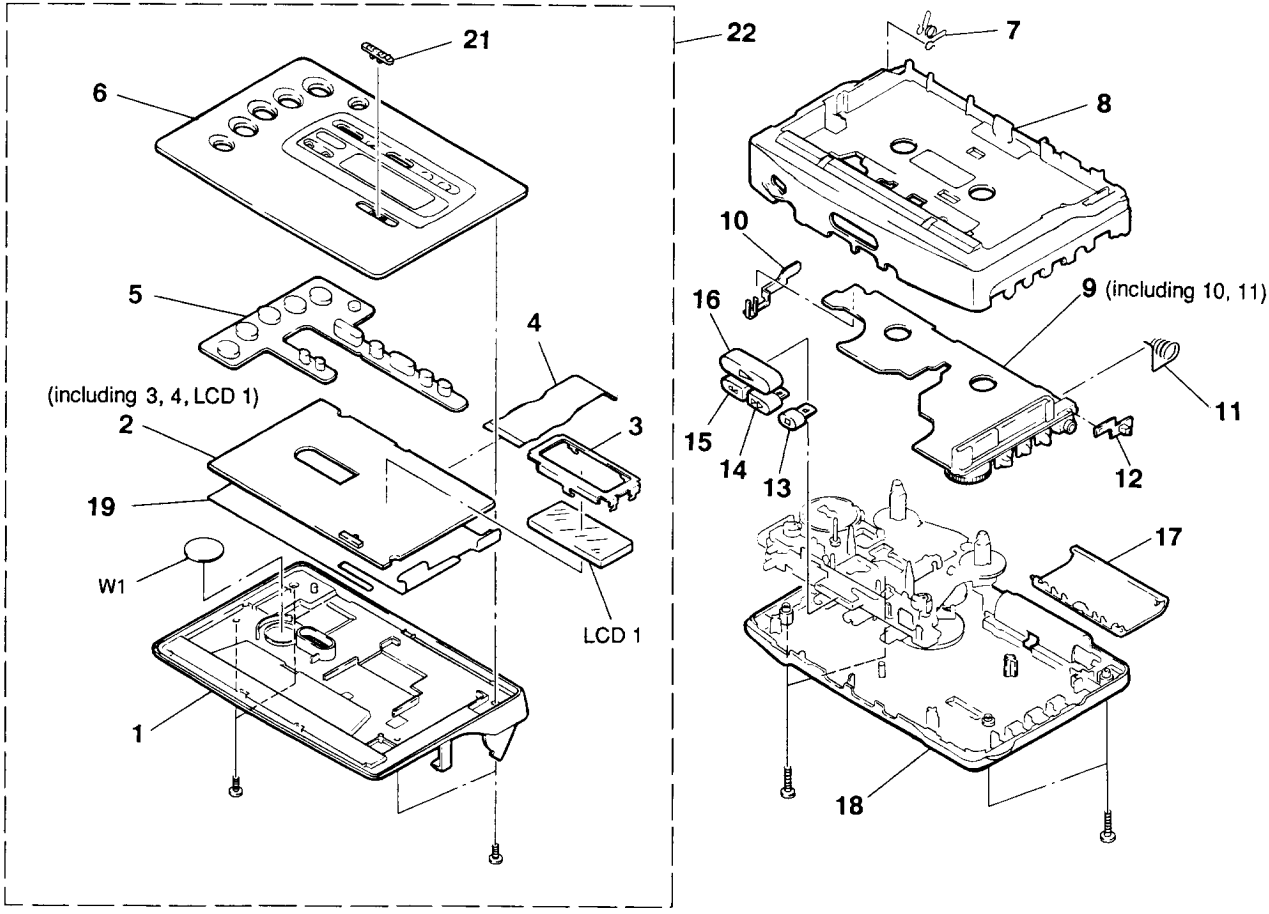


note on Schematic Diagram:

Note:

- All capacitors are in µF unless otherwise noted. pF: µµF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/10W or less unless otherwise specified.
- △ : internal component.
- B+ : B+ line
- ▭ : adjustment for repair.
- Total current is measured with no cassette installed.
- Power voltage is dc 3V and fed with regulated dc power supply from external power voltage jack.
- Voltage and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  no mark : FWD
  ( ) : FM
  < > : AM
- Voltage are taken with a VOM (input Impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
- Signal path.
  ⇨ : FM
  ⇨ : PB

4-1. MAIN SECTION



4-2. TAPE TRANSPORT (MT-WM2051-43)